

*Title:*

***Energy and Environmental Analysis Group  
Summary Viewgraphs***

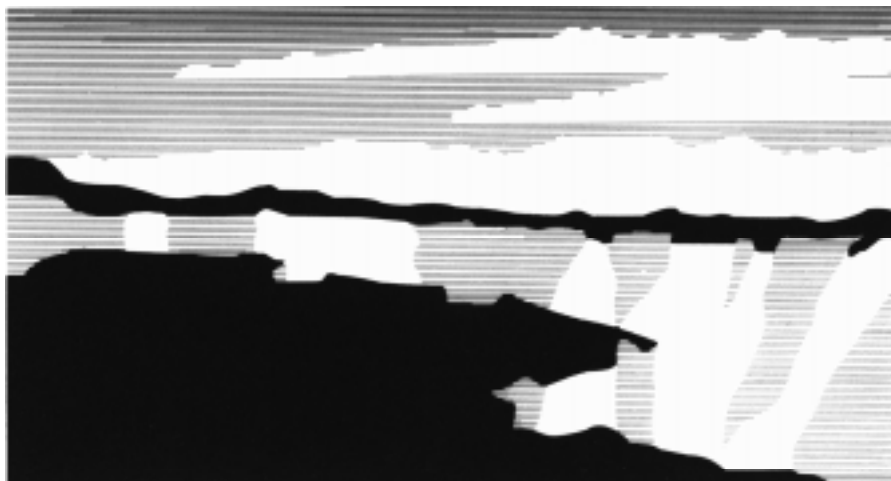
*Author:*

***R. Wayne Hardie, TSA-4***

*Submitted to:*

***Presented around the country and are on TSA-4's  
web page***

**Los Alamos**  
NATIONAL LABORATORY



Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the University of California for the U.S. Department of Energy under contract W-7405-ENG-36. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. The Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; therefore, the Laboratory as an institution does not endorse the viewpoint of a publication or guarantee its technical correctness.



Los Alamos

# Los Alamos National Laboratory Energy and Environmental Analysis Group

R. Wayne Hardie, Group Leader, [hardie@lanl.gov](mailto:hardie@lanl.gov)  
Ray Gordon, Deputy Group Leader, [rgordon@lanl.gov](mailto:rgordon@lanl.gov)

*TSA-4 provides independent and unbiased scientific, engineering, and economic modeling and assessments to energy and environmental decision makers.*

## Environmental Modeling



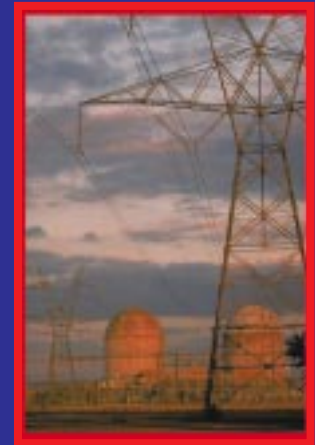
## Environmental Assessment



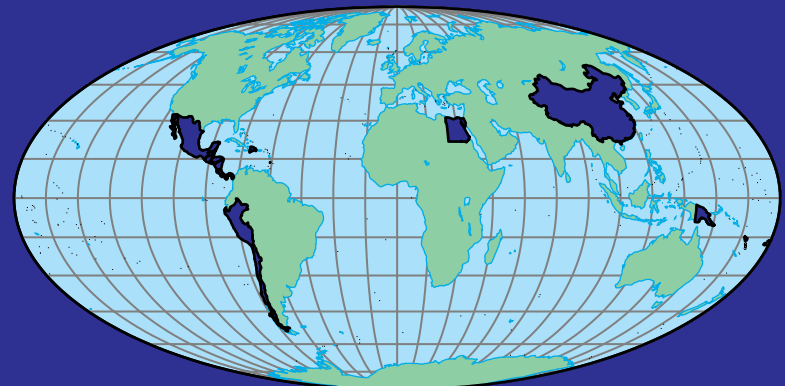
## Economic Modeling



## Energy Modeling and Assessment



## International Collaborations

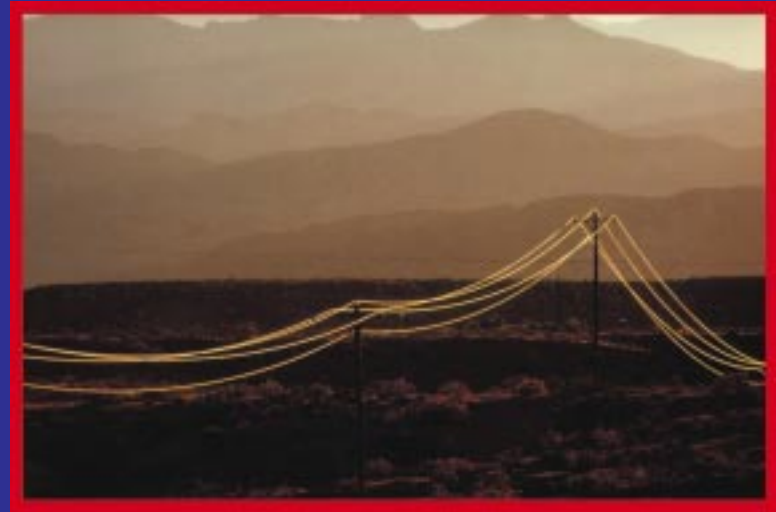




**Los Alamos**

# Energy Modeling and Assessment

- **China energy study**
- **Mexico coal study**
- **Analysis of mixed-oxide fuel for Pu disposition using light-water reactors**



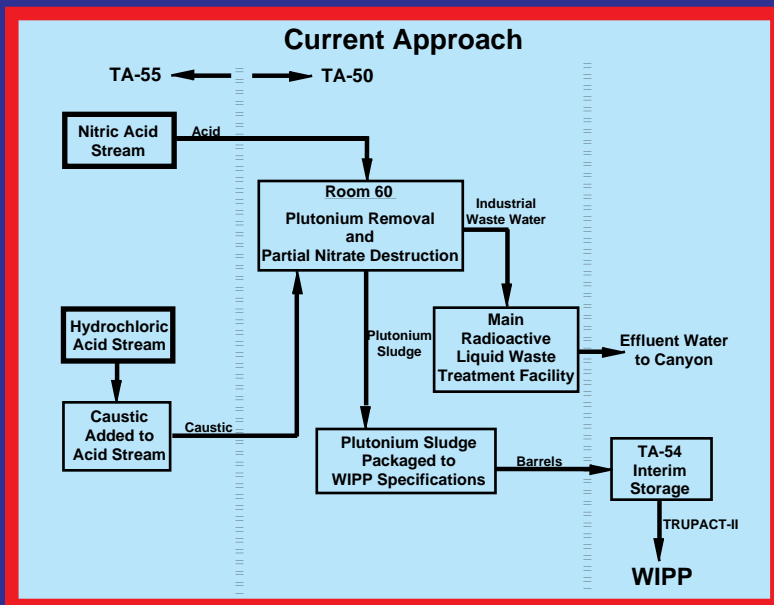
- **Analysis of energy infrastructures (electricity, gas, oil)**
- **Analysis of cost for accelerated production of tritium**
- **Analysis of greenhouse gas emissions from electrical generation plants**



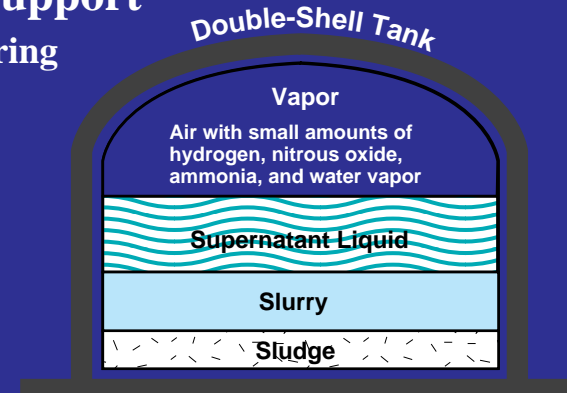
# Environmental Assessment

## Los Alamos

- Environmental Technology Cost-Savings Analysis project
- Clean coal compendium
- Salton Sea remediation option analysis
- Laboratory EM support



- Hanford tank support  
Systems engineering  
Privatization



Source: "Hanford Tank Clean Up: A Guide to Understanding the Technical Issues," Pacific Northwest Laboratory report PNL-10773.



Los Alamos

## Economic Modeling

- National Economic System Simulation
- Regional airport feasibility study
- Money flow modeling
  - Cash flow analysis to detect illicit financial transactions
  - International wire transfer analysis



- Impact studies

DOE facilities on New Mexico  
LANL on northern New Mexico







# Environmental Modeling

Los Alamos

- **TRANSIMS support**
- **Environmental management policy analysis using complex system simulation**



- **Air quality model development and applications**
  - Meteorological models
  - Dispersion models
  - Atmospheric chemistry models
- **Chem/bio programs**



**Los Alamos**

## International Collaborations



- **Support to LANL sister laboratory agreements**

Peru (IPEN)  
Egypt (EAEA)  
Mexico (ININ)

- **Air quality programs**

Mexico City  
Juarez/El Paso  
Chile smelters

- **Energy programs**

Central American and Caribbean energy assessments  
Energy situation in Fiji, Papua New Guinea, and Vanuatu